

**EPA Superfund
Record of Decision Amendment:**

**CHEMICAL SALES CO.
EPA ID: COD007431620
OU 04
DENVER, CO
09/23/1999**

**DECLARATION STATEMENT
FOR
AMENDMENT TO THE DECEMBER 29,1992
RECORD OF DECISION (ROD)
CHEMICAL SALES COMPANY SUPERFUND SITE
OPERABLE UNIT 4 (OU 4)**

SITE NAME AND LOCATION

The Chemical Sales Company (CSC) Superfund Site
Operable Unit 4 (OU 4)
Commerce City, Colorado

STATEMENT OF BASIS AND PURPOSE

This decision document sets forth the change in remedy for OU4 of the CSC Superfund Site located in Commerce City and northeast Denver, Colorado. OU 4 includes South Adams County Water and Sanitation District (SACWSD) Wells 18, 21 and 47. On December 29, 1992, the Environmental Protection Agency (EPA) signed a ROD calling for the connection of the three SACWSD wells to the Klein Water Treatment Facility (KWTF) in Commerce City. Sampling information since the 1992 decision shows that this action is no longer necessary because either contaminant levels have decreased to acceptable levels (well below Maximum Contaminant Levels (MCLs)) or no contaminants are being detected in the wells. The amendment to the OU 4 ROD is No Action.

This decision document was developed to fulfill the requirements of the Comprehensive Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA) § 117 and the National Contingency Plan (NCP) 40 CFR Part 300.435(c)(ii). It is also based on the Administrative Record for the Site. The Colorado Department of Public Health and the Environment (CDPHE) concurs with the amendment to the OU 4 ROD.

DESCRIPTION OF SELECTED REMEDY

Due to contaminant levels dropping to well below MCLs, the originally selected remedy is no longer needed. The amendment to the OU 4 ROD is, therefore, No Action. The EPA has determined that OU 4 does not pose a significant threat to human health or the environment. No other alternatives were evaluated for OU 4 because it is presently in a protective state.

The three wells will be monitored by SACWSD for as long as the KWTF is in operation. Also, approximately 35 wells south of the three SACWSD wells will be indefinitely monitored by CDPHE.

DECLARATION

I have determined that the amendment to the OU 4 ROD of the Chemical Sales Company Superfund Site is protective of human health and the environment and is cost effective. The CDPHE has been consulted and agrees with the amendment. Because this decision will not result in hazardous substances remaining on site, above MCLs, no five year review will be necessary for OU 4. However, SACWSD will continue monitoring the three wells for as long as the KWTF is in operation.



Max H. Dodson
Assistant Regional Administrator
Ecosystems Protection and Remediation
U.S. Environmental Protection Agency
Region 8

SEP 23 1999

Date

DECISION SUMMARY

TABLE OF CONTENTS

I.	INTRODUCTION	1
II.	SITE NAME, LOCATION, AND DESCRIPTION	1
III.	SITE HISTORY AND CHARACTERISTICS	5
IV.	COMMUNITY PARTICIPATION	8
V.	ORIGINAL REMEDY IN OU 4 ROD	9
VI.	BASIS FOR AMENDING ROD	9
VII.	NO ACTION AMENDMENT	10
VIII.	STATE ACCEPTANCE	10
IX.	SIGNIFICANT CHANGES FROM PROPOSED PLAN	10

APPENDIX A: RESPONSIVENESS SUMMARY

APPENDIX B: WELL SAMPLING HISTORY

APPENDIX C: SACWSD LETTER

DECISION SUMMARY
FOR THE
AMENDED RECORD OF DECISION
CHEMICAL SALES COMPANY SUPERFUND SITE
OPERABLE UNIT 4

I. INTRODUCTION

This ROD Amendment sets forth the change in remedy for Operable Unit 4 (OU4) of the Chemical Sales Company (CSC) Superfund Site located in Commerce City and northeast Denver, Colorado. OU 4 includes South Adams County Water and Sanitation District (SACWSD) Wells 18, 21 and 47. On December 29, 1992, the Environmental Protection Agency (EPA) signed a ROD calling for the connection of the three SACWSD wells to the Klein Water Treatment Facility (KWTF) in Commerce City. Sampling information since the 1992 decision shows that this action is no longer necessary because either contaminant levels have decreased to acceptable levels (well below Maximum Contaminant Levels (MCLs)) or no contaminants are being detected in the wells. The Amendment to the OU 4 ROD is No Action. The Colorado Department of Public Health and the Environment (CDPHE) concurs with this ROD Amendment.

This ROD Amendment was developed to fulfill the requirements of the Comprehensive Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Superfund Amendment and Reauthorization Act of 1986 (SARA) § 117 and the National Contingency Plan (NCP) 40 CFR Part 300.435(c)(ii). It is part of the Administrative Record which is available for public inspection at the following locations:

EPA Superfund Records Center
3rd Floor, South Tower (check-in)
999 18th Street
Denver, CO 80202
Mon - Fri, 8:00 - 4:30
(303) 312-6473

CDPHE Records Center
B Building, 2nd Floor
4300 Cherry Creek Drive South
Denver, CO 80246
Mon - Fri, 8:00 - 5:00
(303) 692-3312

II. SITE NAME, LOCATION, AND DESCRIPTION

The CSC Superfund Site is located in Commerce City and northeast Denver. It is approximately five miles northeast of downtown Denver, Colorado. Contamination at this site consists of soils and groundwater contamination. The contaminated groundwater is located in an unconfined alluvial aquifer, which extends to a maximum depth of 100 feet below the ground surface. Groundwater flow on the Site generally moves north to northwest. However,

paleochannels also influence regional flow at times resulting in flow patterns that are not in the same direction as the above mentioned general flow patterns. The Site is divided into four OUs:

OU1: Includes the CSC property and addresses soil and groundwater contamination south of Sand Creek. The approximate boundaries are Forest Street to the west; Monaco Parkway to the east; 1-70 to the south; and Sand Creek to the north (see Figure 1-1). The land use in OU1 is mainly industrial with six residences located in the northern portion.

The CSC property was the location of a former chemical sales business. Soil contamination on and adjacent to the property is considered to be a source of the groundwater contamination on this Superfund Site. The contaminated groundwater flows northward into the other CSC OUs.

OU2: Addresses groundwater contamination generally downgradient of OU1. The approximate boundaries are Holly Street to the west; Quebec Street to the east; Sand Creek to the south; and 86th Avenue to the north (see Figure 1-1). The Rocky Mountain Arsenal (RMA) borders OU2 to the east. OU2 is approximately four square-miles in area. The land use consists of single and multi-family residences, small businesses, and municipal facilities. Boundaries of OU1 and OU2 are defined by the approximate extent of the groundwater contamination, and may expand as groundwater contaminants migrate. No soil contamination has been found in this OU.

OU3: OU3 provides for those residents located in OU2 that are using alluvial well water for domestic uses to be connected to the municipal water system. This reduces their exposure to the contaminated groundwater of OU2. OU3 has the same boundaries as OU2.

OU4: OU4 addresses SACWSD Wells 18, 21, and 47, and is the subject of this ROD Amendment. Wells 18, 21, and 47 are wells that draw water from the alluvial aquifer in and north of OU2. These wells are for purposes of providing water for domestic uses for residents connected to SACWSD.

Well 18 is located at 84th Avenue and Quebec Street and is within the OU2 boundaries and west of RMA. Well 47 is located at 88th Avenue and Quebec Street, and is two blocks north of the OU2 northern boundary and is west of the RMA. Well 21 is located at 90th Avenue and Ulster Street, also west of the RMA (see Figure 1-2). These wells comprise a portion of the SACWSD municipal water supply, which is primarily drawn from the shallow alluvial aquifer. SACWSD serves approximately 30,000 customers.

Figure 1-1 Site Location Map

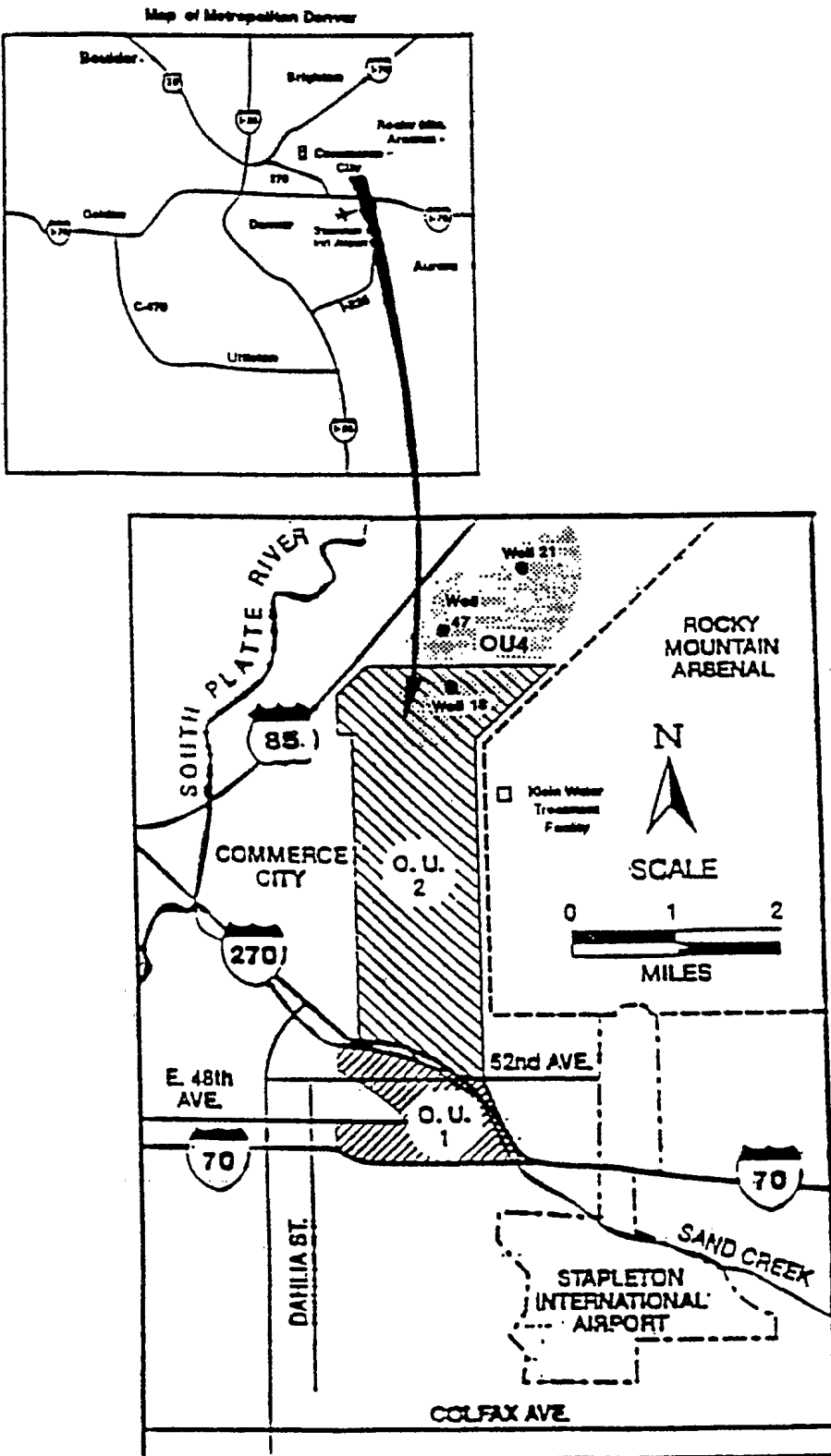
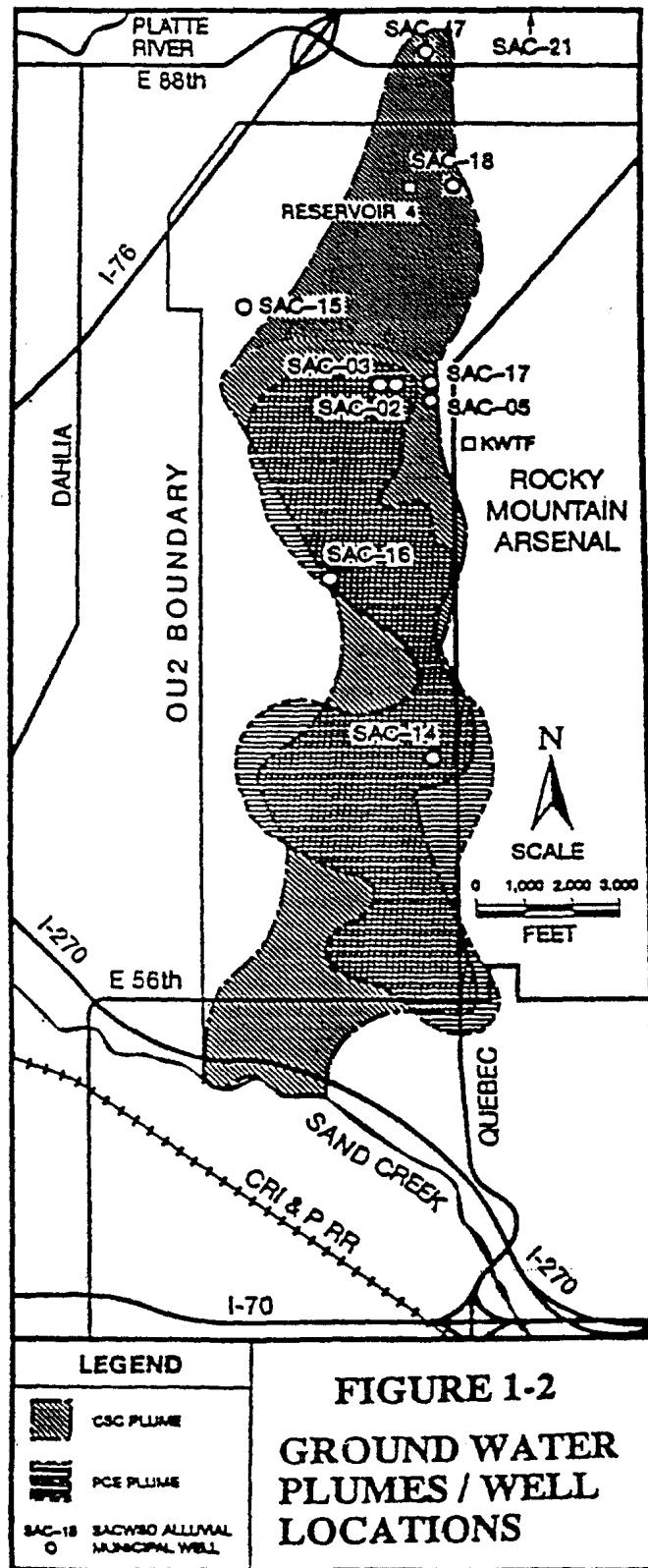


Figure 1-2
Groundwater Plumes/Well Location Map



III. SITE HISTORY AND CHARACTERISTICS

In 1981, the EPA conducted a random national survey of drinking water systems. Several organic chemicals were found by EPA in SACWSD wells. Additional sampling in 1982 and 1985 confirmed this result. As a result, EPA initiated a Remedial Investigation (RI) and Feasibility Study (FS) on an area named "EPA's Off-Post RMA OU1". This area was bounded by East 80th Avenue to the north; East 56th Avenue to the south; South Platte River to the west; and the RMA to the east (see Figure 1-3). The results of the RI indicated extensive contamination of groundwater along the eastern portion of the area. A permanent water treatment plant for SACWSD water was the selected remedy for the EPA Off-Post RMA OU1 ROD dated June 4, 1987.

The permanent treatment plant was built and named the Klein Water Treatment Facility (KWTF). It is near the SACWSD municipal water supply center at East 77th Avenue and Quebec Street. KWTF began operating in October 1989. At that time, six SACWSD production wells were connected to the KWTF. It now protects the health of SACWSD municipal water supply users by treating alluvial groundwater prior to distribution. Also, approximately 400 residents using private wells were connected to the SACWSD municipal water supply under EPA removal actions between 1986 and 1988.

The RMA was suspected as one of the potential sources of groundwater contamination in the EPA's Off-Post RMA Study Area due to its history of waste disposal practices. Investigations by the EPA's Field Investigation Team indicated the potential for other source areas to also be contributing to groundwater contamination. In 1986, the EPA conducted a soil gas survey near 48th Avenue and Leyden Street. This survey indicated elevated trichloroethylene (TCE) concentrations in the vicinity of the CSC facility. Groundwater investigations undertaken by EPA in August/September 1986, at 48th Avenue and Leyden Street and at East 50th Avenue and Ivy Street revealed the presence of volatile organic contaminants (VOCs) in the vicinity of the CSC facility. The presence of TCE and other chlorinated hydrocarbons near the CSC was confirmed by another soil gas survey in August 1987. Groundwater monitoring wells installed on the CSC property have confirmed CSC as a source of groundwater contamination.

Based on these studies and additional work by EPA to define the source areas, the CSC Site was proposed for listing on the National Priorities List (NPL) in June 1988. Investigations for all EPA RMA Off-Post work was then transferred from the EPA Off-Post RMA Study Area to the CSC Site. The NPL listing was made final in August 1990. The EPA RMA Off-Post OUI and CSC geographic areas overlap (see Figures 1-2 and 1-3).

Two distinct groundwater plumes were identified within the CSC Site. The first plume, known as the "CSC plume" or the "TCE plume", originated on CSC property south of Sand Creek and is characterized by high TCE concentrations. The second plume, known as the "perchloroethylene (PCE) plume", originated from an area near 56th Avenue and Quebec Street

and is characterized by high PCE concentrations. Both plumes were located in the shallow alluvial aquifer, with the direction of migration generally following the direction of groundwater flow, which, as mentioned earlier, is generally north to northwest. The direction of flow has been noted to vary from the general flow directions when influenced by the presence of paleochannels. Historically, there have been indications of contamination migration from the RMA property.

Although the plumes are noted to be characterized by TCE and PCE, they contain many other contaminants. The chemicals of concern (COCs) in the groundwater are:

- 1,1-dichloroethane (DCA)
- 1,1 -dichloroethylene (DCE)
- Total 1,2-dichloroethylene (total 1,2-DCE)
- 1,1,1 trichloroethane (TCA)
- Trichloroethylene (TCE)
- Tetrachloroethylene (PCE)
- Benzene (BZ)
- Vinyl Chloride (VC)

During the development of the RI/FS for CSC OU 2, samples taken from SACWSD Well 18 showed TCE levels above the MCLs. Well 18 was only utilized during high demand periods (typically May to September). Since the initial detection in Well 18 in 1981, and during the development of the original OU 4 ROD, the presence of TCE in well water samples persisted, while concentrations fluctuated. Due to the high TCE levels, water from Well 18 was blended with treated water from SACWSD Wells 2 and 3 so that water distributed to SACWSD customers did not exceed the MCL for TCE, which is 5 ppb.

The effectiveness of the blending program was limited by the amount of treated water available to blend with contaminated flows. It was thought at the time that as future demands and contaminant levels rose, an insufficient quantity of treated water would be available to adequately blend the contaminated flows and continue to meet public water use demands. Thus, it was thought that the blending program was a temporary solution to current well water contamination problems, and was not considered to be a viable permanent treatment alternative.

Wells 47 and 21 are situated north and hydrogeologically downgradient from Well 18. Well 47 was installed in 1990, with sampling by SACWSD beginning at that time and continuing to the present. No contamination was detected in Well 47 until July 1991. From July 1991 to May 1992, eight out of ten samples detected TCE concentrations below MCLs.

Although Well 21 had never exhibited VOC contamination, EPA and the State reasonably expected the contaminated plume to eventually reach Well 21 given that the well was downgradient of the CSC plume. EPA and the State also expected the contaminant levels to continuously increase over time in the three wells.

IV. COMMUNITY PARTICIPATION

Community interest in groundwater contamination in south Adams County was very intense in 1985 and early 1986. Initially the RMA was thought to be the sole source of the contamination. Local citizens formed a group, Citizens Against Contamination (CAC), which held a number of well-attended meetings (over 600 attended the March 6, 1986 meeting). EPA and the Army responded to numerous public and media inquiries; issued press releases for new developments; and attended the public meetings. Community relations activities were coordinated among the EPA, the Army, and the SACWSD. The State conducted a separate program.

Public interest subsided in mid-1986 after a temporary water treatment system funded by the Army and authorized by a removal action by the EPA came into operation at SACWSD and treated water was thus made available to the affected residents. In the fall of 1986, EPA named the CSC Site as another source of the groundwater contamination. EPA has since issued a number of fact sheets discussing the progress of the investigation and activities at the Site. The CSC Site was also included in the joint community relations activities with several other south Adams County Superfund Sites.

Proposed plans for OU 1, OU 2, and OU 3 were issued concurrently on February 25, 1991. The public comment period was open from February 25, 1991, to April 1, 1991. A public meeting was held on March 14, 1991, at the Commerce City Recreation Center and was attended by 50-75 people. Details about community involvement throughout the RI/FS and public comment period are included in the responsiveness summaries in the RODs for OU 1, OU 2, and OU 3.

During the latter portion of the RI/FS for OU 2, it was discovered that SACWSD Well 18 began to show levels of TCE above MCLs. In response to this finding, OU 4 was created to address the contamination or potential contamination in SACWSD Wells 18, 21, and 47. The proposed plan for OU 4 was issued on July 10, 1992. The public comment period was open from July 10, 1992 to August 8, 1992. A public meeting was held at the Commerce City Recreational Center on July 21, 1992. Fourteen individuals were present at the meeting, including representatives from EPA, Colorado Department of Health (now Colorado Department of Public Health and Environment), State Senator Dennis Gallagher's office and SACWSD.

The proposed plan for the OU 4 ROD Amendment was issued on July 14, 1999. A notice of availability of the proposed plan and supporting documents and notification of the public meeting were published in the Commerce City Beacon on July 14, 1999 and in the Rocky Mountain News on July 18, 1999. The public comment period was open from July 15, 1999 to August 17, 1999. A public meeting was held in the Commerce City Community Room on August 10, 1999. Twelve individuals were present at the meeting. A transcript of the public meeting has been entered into the Administrative Record. Responses to comments received

during the public comment period on the proposed plan are presented in the Responsiveness Summary of this document (see Appendix A).

V. ORIGINAL REMEDY IN THE OU4 ROD

The selected remedy in the 1992 OU 4 ROD was connection of SACWSD Wells 18, 21, and 47 to the KWTF. The remedy for OU 4 was made up of the following components:

- Connection of Wells 18, 21, and 47 to the KWTF;
- Treatment of well water at the KWTF by granulated activated carbon to below MCLs in compliance with the Off-Post RMA OU1 ROD;
- Regeneration of spent carbon off-site in compliance with the RMA OU 1 ROD;
- Transmission of treated water to Reservoir 4 for storage; and
- Quarterly monitoring of Wells 18, 21, and 47, and Reservoir 4.

The Remedial Action (RA) for Wells 18, 21, and 47 would have continued as long as necessary to ensure that MCLs would be met at the tap. MCLs at the tap would have been achieved via treatment by the KWTF, constructed as a result of EPA, RMA Off-post ROD, dated June 1987. The primary purpose of the RA was to ensure the provision of an adequate drinking water supply to the residents of south Adams County.

VI. BASIS FOR AMENDING THE ROD

Assessment of Health Risk at the Time of the OU 4 ROD. The final CSC OU 2 Remedial Investigation (RI) Report contains a risk assessment for the area of the Site north of Sand Creek. This risk assessment served as the risk assessment for the OU 4 ROD. The risk assessment developed a scenario to provide information regarding the potential health risks associated with Well 18, the first of the wells to be contaminated.

At the time the risk assessment was compiled, average TCE concentrations ranged from 4 to 6 ppb, with the maximum concentration at 12 ppb. (At the time, water from Well 18 was being blended with treated water from the KWTF to ensure that any potential contaminant levels in the untreated water were being diluted to safe levels.) The risk assessment provided an estimate of potential health risks if the water from Well 18 was to be used directly. The same assessment was applied to Wells 21 and 47. The two routes or exposure pathways evaluated quantitatively were: 1) Ingestion of the water during normal residential use; and, 2) Inhalation of VOCs during showers.

Based upon the toxicity profiles and the exposure scenarios developed for the COCs, carcinogenic effects were evaluated for OU 4. The total excess cancer risk was determined to be 2.0×10^{-5} , indicating that with blending of the treated water from the KWTF, operation of Well 18 did not pose an unacceptable risk to receptors of that water. Risks for each of Wells 21 and 47 were considered to be the same as those calculated for Well 18 and thus the analysis applied to Wells 21 and 47. Although contamination had not yet reached Well 21, it was expected that it would at some point in the future and that the risk calculated for Well 18 would be present. While the above risks did not exceed the 10^{-6} point of departure (when blending was considered), the criteria for meeting MCLs necessitated remedial action and consequently a remedy decision. The chronic Hazard Index for OU 4 (.008) indicated an extremely low potential for non-carcinogenic adverse health effects.

Present Health Risk Assessment. Since the time of the OU 4 ROD, contaminant concentrations for the wells have either dropped well below MCLs or the contaminants are no longer being detected. The concentrations have dropped due to the continued capture and treatment of contaminated groundwater by the KWTF, south of the three wells and possibly by natural attenuation mechanisms such as dispersion and adsorption. The basis for adverse health effects and the need for remedial action is no longer present.

Figure 1-4 shows the declining concentration trend for the three wells. Appendix B includes the complete sampling history of the three wells.

VII. NO ACTION AMENDMENT

Due to contaminant levels dropping to well below MCLs, the originally selected remedy is no longer needed. The amendment to the OU 4 ROD is, therefore, No Action. The EPA has determined that OU 4 does not pose a significant threat to human health or the environment. No other alternatives were evaluated for OU 4 because it is presently in a protective state.

The three wells will be monitored by SACWSD for as long as the KWTF is in operation as stated in a letter to EPA dated September 8, 1999 (see Appendix C). Also, approximately 35 wells south of the three SACWSD wells will be indefinitely monitored by CDPHE.

VIII. STATE ACCEPTANCE

CDPHE concurs with this ROD Amendment.

IX. SIGNIFICANT CHANGES FROM PROPOSED PLAN

No changes to the proposed amendment have been made since the issuance of the proposed plan for the OU 4 ROD Amendment.

Figure 1-4. Sampling Information to Support the
ROD Amendment

	TCE (ppb)			PCE (ppb)		
	August 1993	August 1996	January 1999	August 1993	August 1996	January 1999
Well #18	2.6	1.7	1.0	1.0	0.5	BDL
Well #21	BDL	BDL	BDL	BDL	BDL	BDL
Well #47	1.7	1.2	BDL	BDL	BDL	BDL

BDL Below Detection Limit
PCE Perchloroethylene
ppb Parts Per Billion
TCE Trichloroethylene

Note: The Maximum Contaminant Level (MCL) for TCE and PCE is 5 parts per billion, or ppb.

APPENDIX A

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
for
RECORD OF DECISION AMENDMENT
CHEMICAL SALES COMPANY SUPERFUND SITE
OPERABLE UNIT 4

HIGHLIGHTS OF COMMUNITY INVOLVEMENT

Community interest in groundwater contamination in south Adams County was very intense in 1985 and early 1986. Initially the RMA was thought to be the sole source of the contamination. Local citizens formed a group, Citizens Against Contamination (CAC), which held a number of well-attended meetings (over 600 attended the March 6, 1986, meeting). EPA and the Army responded to numerous public and media inquiries; issued press releases for new developments; and attended the public meetings. Community relations activities were coordinated among the EPA, the Army, and the SACWSD. The State conducted a separate program.

Public interest subsided in mid-1986 after a temporary water treatment system funded by the Army and authorized by a removal action by the EPA came into operation at SACWSD and treated water was thus made available to the affected residents. In the fall of 1986, EPA named the CSC Site as another source of the groundwater contamination. EPA has since issued a number of fact sheets discussing the progress of the investigation and activities at the Site. The CSC Site was also included in the joint community relations activities with several other south Adams County Superfund Sites.

Proposed plans for OU1, OU2, and OU3 were issued concurrently on February 25, 1991. The public comment period was open from February 25, 1991, to April 1, 1991. A public meeting was held on March 14, 1991, at the Commerce City Recreation Center and was attended by 50-75 people. Details about community involvement throughout the RI/FS and public comment period are included in the responsiveness summaries in the RODs for OU1, OU2, and OU3.

During the latter portion of the RI/FS for OU2, it was discovered that SACWSD Well 18 began to show levels of TCE above MCLs. In response to this finding, OU4 was created to address the contamination or potential contamination in SACWSD Wells 18, 21, and 47. The proposed plan for OU4 was issued on July 10, 1992. The public comment period was open from July 10, 1992 to August 8, 1992. A public meeting was held at the Commerce City Recreational Center on July 21, 1992. Fourteen individuals were present at the meeting, including representatives from EPA, Colorado Department of Health (now Colorado Department of Public Health and Environment), State Senator Dennis Gallagher's office and SACWSD.

The proposed plan for the OU 4 ROD Amendment was issued on July 14, 1999. A notice of availability of the proposed plan and supporting documents and notification of the public meeting were published in the Commerce City Beacon on July 14, 1999 and in the Rocky

Mountain News on July 18, 1999. The public comment period was open from July 15, 1999 to August 17, 1999. A public meeting was held in the Commerce City Community Room on August 10, 1999. Twelve individuals were present at the meeting. A transcript of the public meeting has been entered into the Administrative Record.

COMMENTS AND RESPONSES

Only one set of comments was received in written form during the public comment period. The comments were submitted by Angela Medbery, Colorado Pesticide Network and Toxic Chair, EMG Sierra Club. It should be noted that Ms. Medbery attended the meeting on August 10, 1999 and expressed similar comments.

1. Angela Medbery, Monitoring Comment.

The OU 1 cleanup has the potential to disturb pockets of contamination which may escape and eventually end up in the OU 4 wells and monitoring must continue on a very regular basis.

EPA Response: After construction of the OU 1 remedy in the source area, monitoring of the treatment systems and groundwater will be conducted to evaluate the performance of the remedy. Monitoring will also be required for the plume area of OU 1 when natural attenuation is implemented. Also, under OU 2, an estimated 35 wells will be monitored indefinitely by CDPHE just south of SACWSD Wells 18, 21 and 47. Given that the contaminated plume follows the direction of the groundwater (which moves in a northwardly direction from the source area), OU 1's potential impact to the area north of Sand Creek will be well known before it reaches OU 4. It should also be noted that SACWSD has committed to monitoring the three wells on a quarterly basis for as long as the KWTF is in operation.

2. Angela Medbery, Food Quality Protection Act of 1996.

The Food Quality Protection Act (FQPA) of 1996 includes water as part of food contamination exposures and also gives a special consideration to children's health in dealing with exposure levels. In some cases an additional safety factor of 10 is even included in risk assessments.

An additional safety factor of 10 would put the permissible TCE and PCE levels at .5 ppb, the current BDL level. If this is the case then well # 18 still needs to be considered for inclusion in the KWTF system.

EPA Response: Please see attached memorandum from Gerry M. Henningsen, EPA Region 8 Toxicologist.

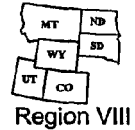
3. Angela Medbery, Monitoring the Health of Children.

Since the Food Quality and Safety Act of 1996 does specifically address children's health concerns it would be wise to monitor health of children who are subject to the TCE/PCE contamination. All health effects that might be related to the contaminants should be included in the monitoring program. Since TCE is a contaminant in a wide number of places in the metro Denver area, statistical comparisons to other children in metro Denver may not be appropriate.

EPA Response: Please see attached memorandum from Gerry M. Henningsen, EPA Region 8 Toxicologist.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466



Ref- EPR-PS

September 20, 1999

MEMORANDUM

SUBJECT: Toxicological Responses to Public Comments on Groundwater Contamination in Wells at OU4, Chemical Sales Company NPL Site, Commerce City, August 1999

FROM: Gerry M. Henningsen, DVM, PhD, DABT/DABVT; CAPT, USPHS
Regional Senior Toxicologist and Co-Chair, Region 8 ETAG

TO: Armando Saenz, EPR-SR
Remedial Project Manager

I read the letter regarding the Chem Sales NPL Site from Ms. Angela Medbury, dated Aug. 16, 1999, and reviewed the referenced laws and regulations of the Food Quality Safety Act (FQSA) of 1996 to respond to Ms. Medbury's comments from a toxicological health risk perspective. Please refer to the more relevant sections of the Act (Public Law 104-170, see Title IV- Amendments to the Federal Food, Drug, and Cosmetic Act, located on the web at: <http://www.fda.gov/opacom/laws/foodqual/fqpa4.htm>).

The points raised by Ms. Medbury are noteworthy in considering health risks to children, but the legal basis and toxicological relevance are not accurate for this subject. First, the FQSA should not be applicable for this situation because: (1) The contaminants, TCE and PCE, are not pesticides, as defined by Sec. 402 (a), nor are they residues in foods as described in this section; and, (2) Water is not considered "food", as defined by this Act in Sec. 402 (c).

Second, while the Act does not specify water as a food, there is an indirect inference [see Sec. 408 (b) (2) (C) (ii)] to water (and all other media) by the consideration of all pathways of exposure when assessing food-borne residues of pesticides. However, EPA is not considering food pesticides as a site related risk-driver at this site, per my understanding, and so incremental water exposures added to pesticide contaminated food intakes are inapplicable. Therefore, the 10-fold additional safety factor for children exposed to food with pesticides is irrelevant per this Act.

Furthermore, the EPA Office of Drinking Water's maximum contaminant level (MCL) is 5 ppb (<http://www.epa.gov/ogwdw000/dwh/c-voc/trichlor.html>) for municipal drinking water supplies that serve numerous people, and thus are not directly applicable to monitoring wells. The levels found in the wells are, in any event, below the MCL which is a currently feasible lowest level reasonably attainable.

Lastly, the toxicity of TCE is subject to considerable controversy. EPA has withdrawn its IRIS toxicity reference values and cancer slope factor values, due to great uncertainties in the types and amounts of toxicity produced by TCE in animal models and in people. For some perspective, the ACGIH and OSHA consider up to 50 ppm (269mg/m³ at 20EC) TCE in air per day to be chronically safe, even to pregnant women; since workers are assumed to breathe up to 20 m³ per working shift, this safe concentration in air equates to a daily dose in water of about 2500 ppm, if an adult drinks 2 liters of water per day. The WHO International Agency for Research on Cancer has also determined that TCE is not classifiable in regards to cancer. Vastly greater amounts of TCE, than currently at Chem Sales, are safely contacted daily in our commercial products, such as in household solvents, white-out and cosmetics. The risks to people from

TCE at Chem Sales are acceptably below EPA standards for health protection.

APPENDIX B

WELL SAMPLING HISTORY

South Adams County Water & Sanitation District
Klein Water Treatment Facility
7400 Quebec Street; P.O. Box 597
Commerce City, Colorado 80037-0597

WELL#18

DATE	1,1	1,1	C-1,2	1.1.1				Bromo
COLLECTED	DCE	DCA	DCE	TCA	TCE	PCE	TCFM	form
07-Aug-92	BDL	BDL	BDL	BDL	4.4	1.6	BDL	BDL
08-Oct-92	BDL	BDL	BDL	BDL	3.7	1.2	BDL	BDL
16-Oct-92	BDL	BDL	BDL	BDL	3.6	1.3	BDL	BDL
26-Jan-93	BDL	BDL	BDL	BDL	3.7	1.4	BDL	BDL
09-Apr-93	BDL	BDL	BDL	BDL	3.2	1.1	BDL	BDL
18-Jun-93	BDL	BDL	BDL	BDL	2.5	1.0	BDL	2.8
06-Jul-93	BDL	BDL	BDL	BDL	1.0	BDL	BDL	6.4
30-Jul-93	BDL	BDL	BDL	BDL	2.5	BDL	BDL	2.8
13-Aug-93	BDL	BDL	BDL	BDL	2.9	1.1	BDL	1.0
27-Aug-93	BDL	BDL	BDL	BDL	2.6	1.0	BDL	2.4
09-Sep-93	BDL	1.1	1.1	1.4	1.5	BDL	BDL	15
04-Oct-93	BDL	BDL	BDL	BDL	2.8	1.1	BDL	1.2
05-Jan-94	0.6	0.8	0.1	0.8	3.7	1.5	BDL	0.7
08-Feb-94	BDL	0.5	0.5	0.7	2.2	0.9	BDL	1.6
21-Mar-94	0.5	0.6	0.7	0.7	2.8	1.1	BDL	3.6
05-Apr-94	0.3	0.5	0.4	0.6	2.0	0.8	BDL	0.9
13-Jun-94	BDL	0.5	0.5	0.6	2.2	0.7	BDL	1.3
25-Jun-94	BDL	0.6	0.5	0.8	2.2	0.8	BDL	3.2
28-Jul-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.9
29-Aug-95	BDL	BDL	BDL	1.0	3.8	1.2	BDL	BDL
03-Jun-96	0.9	0.6	0.8	1.1	3.1	1.0	BDL	2.1
08-Jul-96	1.1	0.7	0.8	1.2	3.8	1.1	BDL	1.8
15-Jul-96	0.8	BDL	BDL	1.1	2.4	0.7	BDL	BDL
22-Jul-96	0.7	BDL	BDL	0.6	1.2	BDL	BDL	BDL
29-Jul-96	0.7	BDL	BDL	1.0	1.6	0.5	BDL	BDL
05-Aug-96	0.7	BDL	BDL	1.0	1.8	0.5	BDL	BDL
12-Aug-96	0.7	BDL	BDL	1.0	1.6	0.5	BDL	BDL
19-Aug-96	0.7	BDL	BDL	1.1	1.7	0.5	BDL	BDL
03-Sep-96	0.6	BDL	BDL	1.0	1.8	0.5	BDL	BDL
16-Sep-96	0.9	0.5	0.5	1.1	2.0	0.6	BDL	2.6
12-May-97	0.7	0.5	0.5	0.9	1.8	0.6	BDL	1.8
21-Jul-97	0.5	BDL	0.5	0.9	1.6	0.5	BDL	3.5
04-Aug-97	0.6	0.6	0.6	0.8	2.1	0.6	BDL	2.3
18-May-98	0.7	0.5	0.7	0.8	1.6	0.6	BDL	3.0
11-Jan-99	BDL	BDL	0.5	0.5	1.0	BDL	BDL	2.6

COMMENTS: Units of Concentration in ppb
Below detection level (BDL) = < 0.5 ppb starting 1/94

South Adams County Water & Sanitation District
Klein Water Treatment Facility
7400 Quebec Street ; P.O. Box 597
Commerce City, Colorado 80037-0597

WELL #21

DATE	1,1	1,1	C-1,2	1,1,1			
COLLECTED	DCE	DCA	DCE	TCA	TCE	PCE	TCFM
26-Nov-90	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11-Apr-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15-Apr-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18-Jul-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31-Oct-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18-Nov-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31-Oct-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18-Nov-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09-Dec-91	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09-Jan-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27-Apr-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05-May-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05-Jun-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12-Jun-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10-Jul-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17-Jul-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24-Jul-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31-Jul-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07-Aug-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14-Aug-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21-Aug-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04-Sep-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18-Sep-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
02-Oct-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08-Oct-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16-Oct-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30-Oct-92	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04-Jan-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
26-Jan-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09-Apr-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06-Jul-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30-Jul-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13-Aug-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27-Aug-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09-Sep-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23-Sep-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04-Oct-93	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05-Jan-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08-Feb-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21-Mar-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL

COMMENTS: Units of concentration on ppb
Below detection level (BDL) = < 0.5 ppb starting 1/94

South Adams County Water & Sanitation District
 South Adams county Water & Sanitation District
 Klein Water Treatment Facility
 P.O. Box 597 ; 7400 Quebec Street
 Commerce City, Colorado 80037-0597

WELL 21

DATE	1,1	1,1	C-1,2	1,1,1			
COLLECTED	DCE	DCA	DCE	TCA	TCE	PCE	TCFM
05-Apr-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13-Jun-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20-Jun-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27-Jun-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05-Jul-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11-Jul-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
18-Jul-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25-Jul-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01-Aug-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08-Aug-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
22-Aug-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06-Sep-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04-Oct-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17-Oct-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31-Oct-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14-Nov-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28-Nov-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12-Dec-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27-Dec-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09-Jan-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23-Jan-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01-Feb-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21-Feb-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07-Mar-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20-Mar-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03-Apr-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17-Apr-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01-May-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15-May-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05-Jun-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19-Jun-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10-Jul-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21-Aug-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28-Aug-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11-Sep-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16-Oct-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23-Feb-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01-Apr-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15-Apr-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03-Jun-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL

COMMENTS: Units of Concentration in ppb
 Below detection level (BDL) = < 0.5 ppb

South Adams County Water & Sanitation District
Klein Water Treatment Facility
P.O. Box 597 ; 7400 Quebec Street;
Commerce City, Colorado 80037-0597

WELL#21								Chloro Form
DATE COLLECTED	1,1 DCE	1,1 DCA	C-1,2 DCE	1,1,1 TCA	TCE	PCE	TCFM	
01-Jul-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.6
08-Jul-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
15-Jul-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
22-Jul-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
29-Jul-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
05-Aug-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
12-Aug-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
19-Aug-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
03-Sep-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
16-Sep-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
30-Sep-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
15-Oct-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
28-Oct-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
12-Nov-96	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
15-Apr-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
21-Apr-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
12-May-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
19-May-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
27-May-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
02-Jun-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
09-Jun-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
23-Jun-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
30-Jun-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
07-Jul-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
14-Jul-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
21-Jul-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
04-Aug-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
18-Aug-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
08-Sep-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
22-Sep-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
17-Nov-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
04-Dec-97	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
05-Jan-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
16-Jan-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
23-Feb-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
23-Mar-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
06-Apr-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
20-Apr-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
04-May-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
18-May-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
01-Jun-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
15-Jun-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
03-Sep-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
05-Oct-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
20-Oct-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
23-Nov-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
11-Jan-99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
19-Apr-99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
17-May-99	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
COMMENTS:	Units of Concentration in ppb Below detection level (BDL) = < 0.5 ppb							

South Adams County Water & Sanitation District
 South Adams County Water & Sanitation District
 Klein Water Treatment Facility
 P.O. Box 597 ; 7400 Quebec Street
 Commerce City, Colorado 80037-0597

WELL #47

DATE	1,1	1,1	C-1,2	1,1,1			
COLLECTED	DCE	DCA	DCE	TCA	TCE	PCE	TCFM
27-Aug-93	BDL	BDL	BDL	BDL	1.7	BDL	BDL
09-Sep-93	BDL	BDL	BDL	BDL	1.0	BDL	BDL
23-Sep-93	BDL	BDL	BDL	BDL	1.0	BDL	BDL
04-Oct-93	BDL	BDL	BDL	BDL	1.0	BDL	BDL
05-Jan-94	BDL	BDL	BDL	BDL	0.7	BDL	BDL
08-Feb-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21-Mar-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
05-Apr-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13-Jun-94	BDL	BDL	BDL	BDL	1.1	BDL	BDL
20-Jun-94	BDL	BDL	BDL	BDL	1.2	0.5	BDL
27-Jun-94	BDL	BDL	BDL	BDL	1.4	0.6	BDL
05-Jul-94	BDL	BDL	BDL	BDL	1.4	0.6	BDL
11-Jul-94	BDL	BDL	BDL	BDL	1.4	0.5	BDL
18-Jul-94	BDL	BDL	BDL	BDL	1.1	BDL	BDL
25-Jul-94	BDL	BDL	BDL	BDL	1.1	BDL	BDL
01-Aug-94	BDL	BDL	BDL	BDL	0.6	BDL	BDL
08-Aug-94	BDL	BDL	BDL	BDL	1.0	BDL	BDL
22-Aug-94	BDL	BDL	BDL	BDL	1.0	BDL	BDL
06-Sep-94	BDL	BDL	BDL	BDL	0.9	BDL	BDL
04-Oct-94	BDL	BDL	BDL	BDL	0.9	BDL	BDL
17-Oct-94	BDL	BDL	BDL	BDL	0.6	BDL	BDL
31-Oct-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14-Nov-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28-Nov-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12-Dec-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27-Dec-94	BDL	BDL	BDL	BDL	BDL	BDL	BDL
09-Jan-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23-Jan-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01-Feb-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21-Feb-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07-Mar-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20-Mar-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
03-Apr-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17-Apr-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
01-May-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
15-May-95	BDL	BDL	BDL	0.5	0.5	BDL	BDL
05-Jun-95	BDL	BDL	BDL	BDL	BDL	BDL	BDL
19-Jun-95	BDL	BDL	BDL	0.5	0.5	BDL	BDL
10-Jul-95	BDL	BDL	BDL	BDL	0.7	BDL	BDL
21-Aug-95	BDL	BDL	BDL	BDL	1.0	BDL	BDL

Comments: Units of concentration in ppb
 Below detection level (BDL) = 0.5 ppb starting 1/94
 Klein Water Treatment Facility

South Adams County Water & Sanitation District
Klein Water Treatment Facility
P.O. Box 597 ; 7400 Quebec Street
Commerce City, Colorado 80037-0597

WELL #47

DATE	1,1	1,1	C - 1 , 2	1,1,1			
COLLECTED	DCE	DCA	DCE	TCA	TCE	PCE	TCFM
28-Aug-95	BDL	BDL	BDL	BDL	1.0	BDL	BDL
23-Feb-96	BDL	BDL	BDL	0.5	BDL	BDL	BDL
01-Apr-96	BDL	BDL	BDL	0.6	0.6	BDL	BDL
15-Apr-96	BDL	BDL	BDL	0.5	0.6	BDL	BDL
03-Jun-96	BDL	BDL	BDL	0.5	1.2	BDL	BDL
02-Jul-96	BDL	BDL	BDL	0.5	1.1	BDL	BDL
08-Jul-96	BDL	BDL	BDL	0.5	1.2	BDL	BDL
15-Jul-96	BDL	BDL	BDL	0.5	1.1	BDL	BDL
22-Jul-96	BDL	BDL	BDL	0.6	1.2	BDL	BDL
29-Jul-96	BDL	BDL	BDL	0.5	1.0	BDL	BDL
05-Aug-96	BDL	BDL	BDL	0.5	1.0	BDL	BDL
12-Aug-96	BDL	BDL	BDL	0.5	1.1	BDL	BDL
19-Aug-96	BDL	BDL	BDL	0.5	1.2	BDL	BDL
03-Sep-96	BDL	BDL	BDL	0.5	1.0	BDL	BDL
16-Sep-96	BDL	BDL	BDL	BDL	0.9	BDL	BDL
30-Sep-96	BDL	BDL	BDL	0.5	0.6	BDL	BDL
15-Oct-96	BDL	BDL	BDL	0.6	1.0	BDL	BDL
28-Oct-96	BDL	BDL	BDL	0.6	0.5	BDL	BDL
12-Nov-96	BDL	BDL	BDL	0.7	BDL	BDL	BDL
15-Apr-97	0.5	BDL	BDL	0.8	0.6	BDL	BDL
21-Apr-97	0.5	BDL	BDL	0.8	0.7	BDL	BDL
12-May-97	0.5	BDL	BDL	0.8	0.8	BDL	BDL
19-May-97	0.5	BDL	BDL	0.8	0.9	BDL	BDL
27-May-97	0.5	BDL	BDL	0.8	0.9	BDL	BDL
02-Jun-97	0.5	BDL	BDL	0.8	0.8	BDL	BDL
09-Jun-97	0.5	BDL	BDL	0.8	0.8	BDL	BDL
23-Jun-97	0.5	BDL	BDL	0.8	0.9	BDL	BDL
30-Jun-97	0.5	BDL	BDL	0.7	0.8	BDL	BDL
07-Jul-97	0.5	BDL	BDL	0.7	0.8	BDL	BDL
14-Jul-97	0.5	BDL	BDL	0.7	0.9	BDL	BDL
21-Jul-97	BDL	BDL	BDL	0.6	1.0	BDL	BDL
04-Aug-97	0.5	BDL	BDL	0.7	0.7	BDL	BDL
18-Aug-97	0.5	BDL	BDL	0.7	0.7	BDL	BDL
08-Sep-97	0.5	BDL	BDL	0.8	1.0	BDL	BDL
22-Sep-97	BDL	BDL	BDL	0.6	0.8	BDL	BDL
04-Dec-97	BDL	BDL	BDL	0.6	0.6	BDL	BDL
05-Jan-98	0.5	BDL	BDL	0.7	0.7	BDL	BDL
16-Jan-98	0.5	BDL	BDL	0.7	0.6	BDL	BDL
23-Feb-98	BDL	BDL	BDL	0.7	0.6	BDL	BDL
23-Mar-98	0.5	BDL	BDL	0.8	0.6	BDL	BDL
06-Apr-98	0.5	BDL	BDL	0.7	0.6	BDL	BDL
20-Apr-98	0.5	BDL	BDL	0.7	0.7	BDL	BDL
04-May-98	0.6	BDL	BDL	0.8	1.0	BDL	BDL
18-May-98	0.5	BDL	BDL	0.6	0.9	BDL	BDL

Comments: Units of concentration in ppb

South Adams County Water & Sanitation District
Klein Water Treatment Facility
P.O. Box 597 ; 7400 Quebec Street;
Commerce City, Colorado 80037-0597

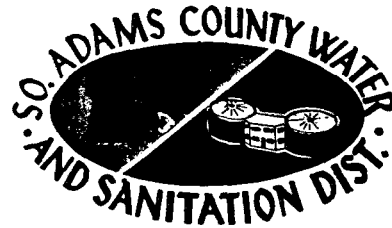
WELL#47

DATE	1,1	1,1	C-1,2	1,1,1			
COLLECTED	DCE	DCA	DCE	TCA	TCE	PCE	TCFM
01-Jun-98	0.5	BDL	BDL	0.6	1.1	BDL	BDL
15-Jun-98	0.5	BDL	BDL	0.6	1.0	BDL	BDL
03-Sep-98	BDL	BDL	BDL	0.6	0.7	BDL	BDL
05-Oct-98	BDL	BDL	BDL	BDL	0.6	BDL	BDL
20-Oct-98	BDL	BDL	BDL	BDL	0.6	BDL	BDL
236-Nov-98	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11-Jan-99	BDL	BDL	BDL	0.5	BDL	BDL	BDL
19-Apr-99	BDL	BDL	BDL	0.7	0.7	BDL	BDL
17-May-99	BDL	BDL	BDL	0.6	0.6	BDL	BDL

COMMENTS: Units of Concentration in ppb
 Below detection level (BDL) = < 0.5 ppb

APPENDIX C

SACWSD LETTER



6595 EAST 70TH AVENUE

P.O. BOX 597

COMMERCE CITY, COLORADO 80037-0597

TELEPHONE 303 288-2646

FAX 303 288-9531

September 8, 1999

Mr. Armando Saenz
Environmental Protection Agency
Region VIII 8EPR-SR
999 18th Street, Suite 500
Denver, Colorado 80202-2466

Dear Mr. Saenz:

I am writing this letter in response to our discussion concerning Chemical Sales Operable Unit 4. It is the District's intention to continue to sample wells 18, 21 and 47 for as long as the Klein Water Treatment Facility is in operation. When we sample for the volatile organic contaminants (voc's) we sample all of the alluvial wells that are in operation at the time. We will continue this practice as long as any of our alluvial wells are at risk from voc's.

I hope this information is helpful. If you have any further questions, please give me a call at (303) 286-0447.

Sincerely,

SOUTH ADAMS COUNTY WATER
AND SANITATION DISTRICT

Jim Jones
Water System Manager

99 SEP -9 PM 2:26
SOUTH ADAMS COUNTY
WATER AND SANITATION
DISTRICT